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Imaginative Elements
in the Written Work of School Children.

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IMAGINATIVE ELEMENTS IN THE WRITTEN WORK OF SCHOOL CHILDREN.

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Several years ago a large number of compositions written by school children were collected by the Department of Psychology of the University of Illinois. These were secured in response to the following circular letter addressed to superintendents and principals of various schools in the State of Illinois:

Dear Sir :

I wish to find out some of the principal interests of children as shown in their regular written work in school and take the liberty of soliciting your assistance in collecting material for that purpose. I desire to get compositions from each of the pupils (as far as possible) of the four upper grades of the grammar school, and of all the grades of the high school, in your town. It is important for the purposes of the study that these compositions should be prepared as a part of the regular work of the pupils and that they should not be revised or corrected by the pupils after the papers have been submitted to the teacher. The pupils from the grades are to select one of the following subjects from which to write:

A Funny Story I Have Read or Heard.
What I See on My Way to School.
The Story of a Poor Boy or Girl.
How the Flowers were Colored.
A Fairy Story.
A Good Joke.

The subjects from which the high school pupils are to select one are as follows:

A Voyage in an Air-Ship in the Year 2000.
How the Flowers Got their Colors.
What I can See with My Eyes Shut.
My First Visit to the Theatre.
Adventures of a School Desk.
Displays in the Shop Windows.
A Laughable Story.
A Poor Family.
A Fairy Story.
A Comical Character.
The Woods in Autumn.
Jokes I Have Played.

I desire the work to be entirely spontaneous and original, with no suggestion as to content or method of treatment, and particularly with no hint on the part of the teacher or parent as to choice of subject. Each paper should have the full name of the pupil, the age and grade. Thanking you in advance for your assistance in the matter, I am,

Very truly yours,

STEPHEN S. COLVIN.

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Later 3,000 of these compositions were studied and the results were expressed in the form of tables and curves. The object of the investigation was to obtain data on the growth of the imagination in school children, and its relation to other elements in their mental life. A record was made of the visual, auditory, tactile, pain, olfactory, gustatory, organic and muscular images among the more simple forms of imagination, while the more complex types were studied under the heads of Scientific, Fairy Story, Nature Myth, Heroic, Dramatic, Religious and Melancholic images.

The first eight types are self-explanatory. The remainder require further comment. Under scientific imagination were considered those images which related to invention, discovery, the construction of machines and devices and the uses of electrical and other natural forces. The fairy story and nature myth concerned that class of imagery which had to do with elves, pixies, gnomes, goblins, etc., and with the mythopoeic fancies common to primitive races and to children. Under the heroic were considered those images which related to ideas of magnanimity, self-forgetfulness, courage and devotion; under the dramatic, striking situations, stirring events and climaxes; under the religious, the supernatural and the devotional; under the melancholic, feelings of sadness and depression. These latter categories were not arranged with any attempt at exact logical sequence. They were rather selected because of the relative prominence or importance of these elements in the compositions studied, and because of their bearing on the known fact of the mental growth of children.

The grading of the various papers under the categories described above offered a difficulty at the outset. An exact grading was manifestly impracticable. To have attempted to indicate in per cent. the absolute value of any of the imaginative elements found in a composition would have been little less than absurd. To say, for example, that one composition contained fifty per cent. of visual, another thirty per cent. of auditory, or a third ten per cent. of mythopoeic images would be to indicate an impossible exactness. On the other hand, it was not found difficult by dividing the compositions into six grades of excellence, to judge with considerable nicety the class into which each should fall for any given element. After some practice facility was gained in judging whether a composition, for example, belonged in the fourth grade for visual imagination, in the third for tactile, in the fifth for dramatic imagery, and so on. Those compositions which contained the lowest amount (quantity and quality both considered) of a type of imagination were put in the first grade for that type, those containing the highest, in the sixth grade; while other degrees of excel-

lence were tabulated between these extremes. In the actual working out of the study it happened that compositions that showed a lack of merit in respect to a particular type of imagination fell in one of the first three grades, while in the three higher grades fell those compositions whose merits in respect to a type were more positive than negative. Each category was graded on the same general scale in order to give a basis of comparison between the various types.

In connection with the study of these types of images a tabulation of the formal correctness, the humor, the feeling and the logical arrangement was made in a similar way. The results thus secured show several interesting and apparently significant facts.

The curves for visual, auditory, tactile and motor types of imagination ran much higher than did the pain, gustatory, organic and olfactory. As would be expected the visual on the whole stood the highest for both sexes, though the auditory was a close second and the motor and tactile not greatly inferior. The averages in grades for the entire eight years being as follows: Visual, boys, 4.84; girls, 4.81. Auditory, boys, 4.10; girls, 4.56. Muscular, boys, 4.06; girls, 3.67. Tactile, boys, 3.50; girls, 3.66.

The curves representing the pain, gustatory, organic and olfactory types ran much lower as above stated, and showed no such approximation as did those of the four higher types. The per cents. for these lower forms were as follows:

Pain, boys, 1.74; girls, 2.04. Gustatory, boys, .82; girls, 81. Organic, boys, .54; girls, 84. Olfactory, boys, .096; girls, .080.

The most striking feature of the curves representing the first four types of imagination is the marked decline at about the onset of puberty with the single exception of the visual type, which shows a steady rise for both boys and girls through the entire eight years studied. This fall, though in a less degree, is likewise to be noted in the four lower types, with the exception of the olfactory, which, however, runs so low for all the years that it may be practically ignored. In the case of the higher types there is a partial recovery during the high school years, but in the case of the lower types the decline continues without recovery. The same general tendency of the curve to fall at the beginning of the adolescent years, is further to be noted in the fairy story, nature myth, heroic, dramatic, and religious types of imagination. The scientific type, particularly with the boys, and the melancholic, which hardly exists before the adolescent years, alone show a rise. Thus it is seen that out of the fifteen varieties of imagination dealt with in the study all but four show the fall at about the beginning of adolescence and of the four that show an opposite or neutral tendency, one,

the olfactory, is so slight for all grades as to be of little importance in the tabulation. The cause of this falling off is in part to be explained, I believe, by the general upheaval that accompanies the onset of puberty. The low grade stability of the preceding years is broken up. Old brain centres cease to function, or at least function not actively or function in different directions. Thus images fade and may die out, or are replaced, as the adolescent years progress and renewed stability comes, by others. The visual escapes this tendency because it is not so deeply centered in the affective being of the child, which suffers the greatest upheaval. It is more intellectual and less vital. It is in a sense formal and external; it is an interesting fact that the curves for formal correctness and for visual imagination run practically parallel for the boys and nearly so for the girls during the entire eight years under consideration. This probably means that the visual imagery has become devitalized and symbolic. It is a significant fact for education to consider.

Another cause that may be operative in the fall of the curves is the increased reticence of expression which comes in early adolescence, especially in connection with the inhibiting influence of school discipline and environment, to spontaneity. As far as these latter causes hold good the results obtained in the present study would show rather the imaginative elements in the school work than in the mind of the child as such. Since, however, the enquiry was primarily directed to the conditions of imagination in the school the facts sought are not obscured by this circumstance.

The explanation for the rise of the curve of scientific imagery is to be found in the immense interest that the American boy in particular takes in all forms of invention and discovery. This is so strong that it overcomes the tendency, potent for the most part, toward the disintegration of the image at the onset of puberty.

A further study of the curves reveals the fact that the visual type of imagination begins considerably higher for the girls than it does for the boys, but that its growth is much more rapid in the grades for the boys. In the high school the two curves are practically identical. The most rapid rise is at puberty when the average age of the boys was 14.77 years and the girls 14.56.

The auditory type shows a very close parallel for both sexes, but is with the girls considerably higher during the entire period studied, the average grade for the eight years being boys 4.10 and girls 4.56. For both boys and girls there is a very gradual increase in the fifth and sixth grades, with rapid accentuation in the seventh, a slight growth in the eighth, a great falling

off in the first year of the high school, with a rapid subsequent recovery and a sharp rise at the end. The decline at about the fourteenth year is to be accounted for, probably, in accordance with the general explanation offered on a previous page, the growth from the fifteenth to the eighteenth years is in accord with the awakening consciousness at adolescence. Since auditory images are closely connected with the sentiments the curve rises and falls in accordance with the fundamental changes in the child. Musical sounds in particular and the cadence of the human voice are potent influences in the life of the adolescent in his early teens. Sounds of nature, too, have a deeper meaning, and, as Dr. Hall expresses it "speak a language to the heart."

The curve for the tactile image is at its maximum for both sexes at about the onset of puberty. It then falls very markedly, and recovers but slightly during the high school years. The boys' average in the grades is .39 higher than in the high school. The fact that the tactile image decreases in the high school is in agreement with experiments performed by Weber and Mano. Weber found tactile sensation to decrease with growth.

The motor images reach their highest point for both sexes in the eighth grade where the average is 4.54 for the boys and 4.42 for the girls; in the ninth they fall very markedly, reaching 3.71 for the boys and 3.38 for the girls. In the second year of the high school the boys show a decided recovery and a return in the last year to a point not much below the average for the grades, with the girls on the other hand the curve sinks still lower in the second year and recovers but slightly in the last two years. Through the grades the boys find this their most powerful form of imagery. The average for the girls in the grades is also high. The marked fall of the curve particularly in the cases of the girls, is entirely in harmony with the physiological and psychical changes at the onset of puberty. The languor and day-dreaming attending early adolescence is little conducive to the development of motor images.

Pain images, while running much lower than any of the four types mentioned above, are comparatively high, the average grade for the entire eight years being 2.04 for the boys and 2.21 for the girls. The curves for both sexes show close similarities. There is a marked fall at puberty and a slow decline thereafter for the boys, for the girls there is a slight tendency to rise during the last year of school. This is in accordance with a number of previous studies, which go to show that sensibility to pain diminishes for both sexes as age increases. There is also a natural reticence to expression of pain,

especially among boys as they approach adult life, it being considered unmanly to show that pain is felt. There is reason to suppose that with the onset of menstruation, one type of pain imagery increases, and this should tend to make the curve rise in girls; this tendency, however, is checked in expression by the opposite one of diffidence, and doubtless has its effect in cutting down pain images in the written work in the school.

The curve for the gustatory images runs considerably lower than does that for pain, and shows a continuous fall from the sixth grade for both sexes. The curves are practically parallel throughout their entire course, that for the girls remaining higher than that for the boys. The average grade for the boys during the four years in the grades is 1.38; for the high school .82. For the girls the corresponding grades are 1.67 and 1.08 respectively. It is natural there should be a diminution of these images as the child passes out of the mere vegetative self. That they preponderate more in the girls than in the boys is largely to be explained, I believe, by the fact that woman is nearer the race; she approximates more closely to the fundamental type; she is less specialized and is nearer the primitive biological norm.

The term organic type of imagination is here used as referring to images in connection with internal bodily changes. It runs somewhat lower than the gustatory, but follows a course very similar. It is considerably higher for the girls than for the boys, a circumstance which may be possibly explained by the fact that the affective processes in girls are more intense than in boys. The fact that it is lower in the high school than in the grades is to be accounted for possibly on the ground that the strong emotions of adolescence, and the organic changes accompanying them, do not readily find expression, while in the pre-adolescent stage the more simple emotions do find such expression.

The olfactory images run very low throughout the entire eight years studied. There is in the case of the boys, however, a positive increase after puberty, which may be in part accounted for when we consider the close connection between odors and æsthetic emotion and also the sex life. The fact that olfactory images in the case of the girls seem stronger before puberty than afterwards may be explained to an extent by the circumstance that odors and tastes are almost indistinguishably connected, and since the girls show a more marked gustatory preference, it would be natural that they should show an olfactory preference as well. The fact that the smell images fall off in the case of the girls just at the onset of puberty may be explained by the breaking up of the old nutritive self, while the partial recovery in the last two years of the high school may

mean that smell images have come to have for the girls, as well as for the boys, an æsthetic and a sexual, rather than a mere nutritive, value.

Highest in grade among the more complex forms of imagination comes the heroic. It stands the highest for the boys in the earlier years and the later years studied, while during the last years of the grades and the first years of the high school it shows a decided decline, being at the lowest when the average age for the boys is 14.77 years. With the girls there is a steady development with only a slight fall during the first year of the high school course. For both boys and girls it seems to be a more constant form of imagination than many others, and one that stands the shock at the onset of puberty better. The average for the boys in the grades is 1.19, for the girls 1.20. In the high school the figures are 1.11 and 1.41 respectively. For the dramatic imagination the figures are somewhat similar, though slightly lower; the girls here showing a more marked superiority over the boys than in the heroic. This may be accounted for largely by the greater intensity in girls of those feelings which centre around these two types of imagination. In this connection may be mentioned the study of Dr. Edwin G. Dexter¹ in which he shows that on the stage public recognition comes much earlier for women than for men.

The curve representing the growth of the scientific imagination shows a rise for both sexes during the first year in the high school. The average is much higher for the boys than for the girls. In the case of the former, it is for the grades .56 and the latter .32. The corresponding figures for the four years of the high school are 1.86 and .68. The highest point for the boys and for the girls alike is reached in the last year of the high school when it is 2.70 for the boys and .89 for the girls.

The mythopoeic imagination, represented by the fairy story and by the nature myth, found its greatest expression in the compositions written in the grades. The average for the fairy story in the grades is, boys, .665; girls, .930. In the high school it is, boys, .185; girls, .620. The average for the nature myth in the grades is boys, .395; girls, .570. In the high school the figures are, boys, .160; girls, .270. These figures clearly show that this type of imagination tends to disappear as the age of the pupil advances.

The curve representing the religious imagination is at its highest in the fifth grade for both boys and girls. In the case of the boys it falls off rapidly in the last two years of the grades and sinks to a still lower point in the high school. With the girls there is a general tendency to fall, though it is

¹Age and Eminence, Pop. Sci. Mo., April, 1904.

not so pronounced. In the face of the well known facts in regard to the religious emotions at adolescence as set forth by President Hall, Starbuck, James and others this decline means not that the high school pupil is lacking in religious emotions, but that the school environment is hostile to the expression of such feelings. The fact that there is a greater expression of such images in the grades than in the high school is to be interpreted as showing that the earlier expressions are for the most part conventional, and have not the genuineness of those feelings that belong to the adolescent ferment. The youth hesitates in an unfriendly atmosphere to express his deeper feelings, yet there should be no barrier to such expression.

Melancholia does not belong to the pre-adolescent period. In the grades such images are practically absent for both sexes. In the high school they begin to manifest themselves, and are greater (more than double) in the case of the girls. Doubtless the compositions studied reveal but to a slight extent the actual intensity of the melancholic moods in both sexes. A natural diffidence, as in the case of the religious imagination, forbids its full expression in the work of the high school.

As would be expected the formal correctness of the themes improved throughout the eight years in the compositions studied, being at its highest during the last year of the high school for both sexes. There is a close correspondence between this curve and that of the visual imagination especially in the case of the girls. This may point to the fact that good visualizers have a decided advantage in the mechanical work of composition over others whose images come more largely from other fields. This, too, bears out what has been said in regard to the more formal nature of the visual type. There seems to be much less relationship between formal correctness and other types of imagery.

Logical power, like formal correctness, develops throughout the school course in the case of the girls and the curve is quite similar to that of formal correctness. This is less true in the case of the boys. Indeed, for some reason, there is an actual falling off in the last two years of the high school. This, however, must be due to some non-essential cause, and can have no fundamental significance. Logical power shows no pronounced relation to any type of imagination except the visual.

The sense of humor of both boys and girls is of a relatively low grade. The curve runs much higher for the boys than for the girls, and reaches its maximum in the seventh grade.¹ It falls decidedly for the boys in the first year of the high school course

¹ This is in entire accord with previous studies on the sense of humor made by the writer.

and slightly for the girls. There is considerable resemblance in the curve for the boys between pain images and humor. A connection here may be found in the fact that the type of humor manifested by the boys is largely of the teasing and bullying variety. The curve for the organic images also shows resemblance to the curve for humor, as does further the curve for motor images. There seems to be no clear relation between humor and the other types of imagination.

The curve representing the course of feeling runs high for both sexes and shows a constant growth. It is higher for the girls than for the boys. As might be expected there is a resemblance between the curves for feeling and for the heroic and dramatic imagery. Although the growth is constant it is not rapid. The average for the grades is: boys, 4.13; girls, 4.33. For the high school the corresponding figures are: boys, 4.58; girls, 4.78. Between the first and last years of the high school the growth for the boy is only .17 and for the girls .33. These figures would hardly suggest the great awakening in emotional life which comes at this time, particularly when it is further known that during the four years studied in the grades the increase for the boys is .36 and for the girls .49. Evidently the repressive influence of the school environment is showing itself here.

The results obtained by the study point to certain conclusions important for education to consider. These may be stated as follows:

I. In general the imagination of school children shows a decline during the years studied. This decline may be in part only seemingly such, as in the case of the religious imagination, and may be due in a degree to an increasing reluctance of the youth to give expression to his more vital experiences.

II. Whether this decline is actual or only seeming (confined to the work of the school) it is apparent that our present system of education does little to cultivate the imagination. Indeed it must in many instances exercise a negative influence. It tends possibly in some instances to crush out the imaginative powers.

III. The only type of imagination that shows a substantial growth is the visual, and this type has doubtless become symbolic, and is devitalized. Thus, again, it is shown that our school education tends toward the mechanical and formal, rather than toward the spontaneous and vital.

IV. At the onset of puberty there is a tendency for the neurones to become disassociated and for the old images to drop out. Previous forms of imagination disappear, especially those types which belong to the "lower self." With the reconstruction of the psychic life, come the "higher" types of

imagination. Here is the opportunity of the schools to appeal to the deep fundamental elements of child nature, — an opportunity sadly neglected for the most part.

V. There seems to be but little place for humor in the school work. The cruder types are the only ones that find expression to any considerable extent. This is shown by the fact that with the lessening of the pain, tactile, and organic images, there is a corresponding decline in the humorous elements in the compositions studied. The school offers no encouragement to the development of a higher sense of humor, thus ignoring one of the most vital phases of human experience.

VI. The great growth in feeling during the high school years evinces itself by a slight rise of the curve during this period ; the rise, however, cannot to any degree represent the actual growth in the affective life ; and this again indicates the repressive influence of the school work on the emotional elements of consciousness.

VII. The above may be summed up by the statement that the school puts a premium on mechanical exactness, formal expression, and rhetorical correctness. It ignores, or actually hinders, the expression of the deeper self. It educates only a part of the child.



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